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Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 19 July 25, 1969 Number 30

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

ARMYWORM moth collections in blacklight traps high in Wisconsin (p. 567), Ohio, and Minnesota. (p. 586). CORN LEAF APHID increasing slowly on corn in central and western Illinois; occurring in all sorghum fields in parts of Kansas; heavy on sorghum in some areas of Oklahoma; damaged grain sorghum in New Mexico and several fields of barley in Utah. (p. 567). GREENBUG damage appearing in sorghum in Colorado; heavy on grain sorghum in Texas. (p. 568). POTATO LEAFHOPPER caused some yellowing of alfalfa in Ohio; increasing on alfalfa in central Maryland; heavy on alfalfa in east-central Missouri. (p. 568).

EUROPEAN CORN BORER infested about 50 percent of cornstalks in southwestern Ohio. Established for second year in Colorado but confined to small area in Weld County. (pp. 568-569). FALL ARMYWORM damaged corn in Illinois, Nebraska, and Oklahoma. (p. 569). CORN ROOTWORMS caused some damage in Wisconsin, Minnesota, and South Dakota; increasing in Illinois. RICE STINK BUG and GRASSHOPPERS damaged rice in eastern Texas; SORGHUM MIDGE heavy on late-planted grain sorghum in central part of State. (p. 570).

BOLL WEEVIL larval mortality high due to hot dry weather in Tennessee and South Carolina. (p. 573). BOLLWORMS damaging cotton in west Tennessee and north Alabama. (p. 574).

TOMATO FRUITWORM expected to be severe in August and into September in Illinois. (p. 575). STRIPED CUCUMBER BEETLE damaged cucumbers in Alabama. (p. 576).

A PINE NEEDLE-SHEATH MINER damaged pine in Oregon. (p. 578).

MOSQUITOES building up in Ohio; severe and widespread in Wisconsin; heavy in Rhode Island and areas of Minnesota. (p. 581).

JAPANESE BEETLE damaging grapes in Tennessee and soybeans in Maryland. (p. 583). GRASSHOPPERS economic on rangeland in Washington; heavy on alfalfa and grain in Nevada; caused some damage in Utah. (p. 583).

Detection

New State records include an ANT and a PLANT BUG from Utah; SWEETPOTATO FLEA BEETLE from Arizona (p. 571); an APHID from Maryland and FACE FLY from Arkansas (p. 580); a NOCTUID MOTH from Hawaii (p. 584).

For new county and island records see page 585.

Change in Scientific Name

Scientific name of ASH PLANT BUG has been changed. See footnote on page 580.

Special Reports

Measuring Insect Infestations (p. 587).

Preparation of Notes for Cooperative Economic Insect Report (p. 588).

Reports in this issue are for week ending July 18 unless otherwise indicated.

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WEATHER BUREAU'S 30-DAY OUTLOOK

MID-JULY TO MID-AUGUST 1969

The Weather Bureau's 30-day outlook for mid-July to mid-August is for temperatures to average above seasonal normals east of the Continental Divide except for near to below normal in the northern border States. West of the Divide below normal temperatures are indicated for the northern half of the area and near normal elsewhere. Precipitation is expected to exceed normal in northern border States and also over the southern Rockies. Subnormal totals are indicated for the Atlantic coast and most of the South except for near normal along the gulf coast. Little or no rainfall is expected in central and southern California. Elsewhere near normal rainfall is in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price $5.00 a year.

WEATHER OF THE WEEK ENDING JULY 21

HIGHLIGHTS: Precipitation ranged widely from none in the Far West to flood producing heavy local downpours in several North Central States.

PRECIPITATION: Widely scattered thunderstorms dropped light amounts of rain from the Rocky Mountains to the western Great Lakes and along the gulf coast early in the week. Heavier thundershowers fell in Iowa, northern Illinois, and the middle gulf coast on Wednesday. Amounts ranged up to 5.5 inches in south-central Iowa and to more than 5 inches in southern Alabama. Moline, Illinois, received more rain in the first 18 days of July 1969 than in any previous July of record. Widely scattered heavy local showers fell Thursday night from North Dakota to the Gulf of Mexico. A station near Brainard, Nebraska, received 3.50 inches in 20 minutes. Over 5 inches fell at Beulah, North Dakota, during the night and more than 6 inches fell in some of Chicago's suburbs. Weather of the week continued on page 585.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMYWORM (Pseudaletia unipuncta) - OHIO - Moderate on field corn in Madison, Scioto, Pike, Clinton, and Brown Counties. One infestation on sweet corn in Franklin County. (Miller). MICHIGAN - Adults at blacklight stations reached season high week ending July 14. Destruction of grain crops by larvae will be minimal due to late population peak. (Newman). WISCONSIN - Trace in corn and lodged oats. Adults numerous in tall grass at Madison area. Over 1,000 moths caught in blacklight trap at Arlington July 12-13. Outbreak on corn possible. Few larvae on corn. (Wis. Ins. Sur.). NEBRASKA - Second-generation larvae active in crops, field margins, and lawns in central and eastern areas. Averaged about 4 larvae per corn plant in several Dawson County fields. (Peterson, Witkowski). CALIFORNIA - Larvae heavy on lawns and permanent pastures locally at Madera, Madera County. (Cal. Coop. Rpt.).

ASTER LEAFHOPPER (Macrosteles fascifrons) - WISCONSIN - Low in counties bordering Lake Michigan. Averaged 2 per yard in carrots of Oconto County. Aster yellows disease low in carrots and lettuce in northeastern counties. (Wis. Ins. Sur.).

BEET LEAFHOPPER (Circulifer tenellus) - UTAH - Collected 14 in 10 sweeps on Russian-thistle in southern Skull Valley, Tooele County. (Knowlton, July 14). WASHINGTON - Increasing in all of eastern area. (Landis).

CORN EARWORM (Heliothis zea) - MARYLAND - Ranged 1-3 per 10 ears of sweet corn throughout Eastern Shore. (U. Md., Ent. Dept.). WEST VIRGINIA - Larvae light (averaged 2 per ear) in sweet corn in Boone and Logan Counties. (W. Va. Ins. Sur.). GEORGIA - Infestations light; moths active across peanut belt. (French). ARKANSAS - First and second instars light, less than one per row foot on late-bloom sorghum in Woodruff County field. (Boyer). MISSOURI - Third and fourth instars on 11-29 percent of early corn in southeast area. (Munson). KANSAS - Infested corn ears ranged 60-95 percent in Miami, Linn, Bourbon, Crawford, Labette, Wilson, Montgomery, and Elk Counties. About 90 percent of larvae newly hatched to half grown. (Simpson). OKLAHOMA - Reported heavy in sorghum whorls in Okfuskee County, moderate in Marshall County. Averaged 8 per 100 heads in sorghum in Tillman County; reported heavy in heads in Jackson and Kiowa Counties. Reported heavy in corn in Bryan County. (Okla. Coop. Sur.). TEXAS - Larvae light to heavy on sorghum in Jackson County. Locally medium on 6-week-old sorghum near Uhland, Caldwell County. (Wilson, Person). NEW MEXICO - Heavy; damaged Luna County grain sorghum. (N.M. Coop. Rpt.).

CORN LEAF APHID (Rhopalosiphum maidis) - MINNESOTA - Heavy on sorghum in Hennepin central and western sections. Remains low with winged adults and few colonies found on 1-5 percent of plants. (Ill. Ins. Rpt.). NEBRASKA - Ranged 0-850, averaged 200+, per whorl in grain sorghum checked in Lancaster, Seward, York, Hamilton, and Hall Counties. (Keith). KANSAS - Present in every sorghum field examined on July 8 in Ford, Gray, Haskell, and Seward Counties. Ranged from trace to heavy. Lady beetles averaged 1 per 2 plants. (Brooks). R. maidis developing rapidly on sorghum in Finney County. Lady beetles and other predators light in most sorghum surveyed. R. maidis present in every sorghum field examined in Sedgwick, Harvey, Marion, and Dickinson Counties; 5-15 percent of plants heavily infested with 1,500-3,000 per plant. Most other plants with 25-75 per plant. Light to moderate in sorghum in Miami, Linn, Crawford, Labette, and Montgomery Counties. Ranged 5-35 per infested plant with 15-30 percent of plants infested. Lady beetles numerous (1-3 per plant) in most fields checked in southeast, south-central, and central areas. (Simpson). OKLAHOMA - Extremely variable on sorghum throughout panhandle area. Ranged up to 8,000 per plant in some Cimarron County fields. Ranged 2,000-4,000 per plant in scattered fields in Texas and Beaver Counties; 10-15 per plant in other fields. Reported moderate to heavy in Ellis and Beckham Counties. (Okla. Coop. Sur.). NEW MEXICO - Heavy; damaged grain sorghum in Luna and Hidalgo Counties. Controls applied. (Campbell). COLORADO - As high as 1,000 per sorghum plant in Cheyenne County. Very low in most eastern areas. (Johnson). UTAH - Damaging several fields of spring barley in Newton area, Cache County. (Knowlton, July 14).

GREENBUG (Schizaphis graminum) - MINNESOTA - Heavy on sorghum in Hennepin County research plot. (Minn. Pest Rpt.). NEBRASKA - One to two colonies of 3-35 aphids per colony developing on lower leaves of 5-15 percent of sorghum plants in Lancaster, Seward, York, Hamilton, and Hall Counties. Remain below economic threshold but increasing. Predators abundant. (Keith). KANSAS - Increasing in Finney County on July 16. No economic injury occurring yet. (DePew). None found in any sorghum examined in Miami, Linn, Bourbon, Labette, Montgomery, Elk, and Cowley Counties. (Simpson). COLORADO - On corn in Arkansas Valley; low compared to counts on sorghum; damage appearing in few isolated fields. Counts on sorghum variable in eastern area. Damage but no aphids found in Morgan, Logan, Sedgwick, Phillips, and Washington Counties. Up to 2,000 per sorghum plant in Kit Carson County field; damage extremely heavy on edge of field. Up to 500 per plant, light damage in Cheyenne County. Up to 350 per plant (average less than 50) in Arkansas Valley. (Johnson, Burchett). OKLAHOMA - Numbers on sorghum in panhandle variable; tend to increase considerably east to west. Ranged up to 2,000 per plant in Cimarron County, mostly 400-1,000. Ranged up to 2,000 per plant in occasional fields in Texas County, but 50-500 in most fields. In Beaver County very few fields ranged over 100 per plant. Ranged 200-800 per plant in many fields in Ellis County; heavy numbers reported in few fields in Beckham County. Ranged 30-40 per plant in Kiowa and Jackson Counties, 10-15 on occasional plants in Payne County. (Okla. Coop. Sur.). TEXAS - Light on grain sorghum in Martin and El Paso Counties. Seems to be increasing on sorghum in South Plains area. Light to moderate in northern High Plains in older grain sorghum, no heavy buildup yet. Light in Haskell and Stonewall Counties; beneficial insects appeared to have greenbug under control week ending July 11. (Neeb et al.). Heavy, 15-20 colonies per plant, and damaging sorghum in El Paso County; colonies ranged 2-3 per plant in Martin County. Activity in Pecos County decreased with 2-6 colonies per plant in most fields. Heavy widespread and spotted populations damaged grain sorghum in Knox County. Controls applied in El Paso and Knox Counties. (Neeb, Boring).

POTATO LEAFHOPPER (Empoasca fabae) - WISCONSIN - Averaged about 4 per 20 sweeps in Columbia County alfalfa. Some nymphs evident on snap beans. (Wis. Ins. Sur.). OHIO - Fluctuating just below economic numbers. Ranged 6-7 per 10 sweeps in soybeans and alfalfa in southwestern area. As high as 10 per 10 sweeps in Clinton County; control recommended at this level. Yellowing in some alfalfa in Wayne County. (Flessel). Highest population observed about 30 per sweep in lawn at Brush Creek Ranger Station in Scioto County. (Richter). MARYLAND - Ranged 32-75 per sweep in 12 acres of alfalfa near Knoxville, Frederick County. Generally light on all crops statewide, but increasing rapidly in central area alfalfa. (U. Md., Ent. Dept.). MISSOURI - Adults and nymphs, mostly nymphs, 125-200 per sweep on east-central area alfalfa. (Huggans, Munson).

POTATO PSYLLID (Paratrioza cockerelli) - WYOMING - Adults ranged 0-6 per 100 sweeps on untreated potatoes in Goshen and Laramie Counties. (Parshall).

TOBACCO BUDWORM (Heliothis virescens) - FLORIDA - Larvae damaging flowers of tobacco (flue-cured type) at Gainesville. Collected and determined by L.C. Kuitert. First and second instars very heavy on 2 acres of pigeonpea, Cajanus cajan, in experimental planting in Gainesville, Alachua County. Many eggs on flowers. A braconid, Cardiochiles nigriceps, abundant. (Fla. Coop. Sur.). ARKANSAS - In 4 small tobacco fields in Carroll County. (Lincoln, Phillips).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - DELAWARE - Adults averaging 25 per night in blacklight trap collections in western Sussex County. Pupation just starting in New Castle County. (Burbutis). SOUTH CAROLINA - Damaged corn in several counties. (Thomas, July 16). WEST VIRGINIA - Heavy in sweet corn in Boone and Logan Counties. Larvae averaged 7-10 per stalk. (W. Va. Ins. Sur.). OHIO - Most borers in late instar, about 50 percent of stalks infested in southwestern area. (Richter). WISCONSIN - Larvae infested 0-15 (average 5) percent of corn in St. Croix and Pierce Counties. Larvae numerous in edges of Columbia

County fields. First flight definitely past peak and declining rapidly. Canners have been treating sweet corn for at least 2 weeks. (Wis. Ins. Sur.). ILLINOIS - First-generation borers pupating and moths emerging in southern half of State. Pupation beginning in northern half of State. (Sur. Bull.). MICHIGAN - Blacklight collections dropped sharply from high of 216 on June 19 to low of 8 on July 3. Small numbers still emerging; both sexes represented. Egg laying and larval problems will be at reduced intensity. Some field corn in Lenawee County showed high percentage of whorl infestation (13 in 25 plants). (Newman, July 14). MINNESOTA - Averaged 6 egg masses per 100 plants in west-central district. Only first instars present. Infested average of 7 plants per 100. Averaged 1 egg mass per 100 plants in central and east-central districts. Larvae 61 percent second instar; rest first instar. Infested average of 14.1 plants per 100. (Minn. Pest Rpt.). SOUTH DAKOTA - Infested 15-50 percent of corn plants in fields sampled in Clay and Lincoln Counties. Larvae not yet entered stalks. (Jones, Kantack). NEBRASKA - Ranged 25-75 percent of corn plants infested (average 54) in 4 Dixon County fields. (Hill). Infested occasional sorghum plant (less than 1 percent) and 2-28 percent of corn plants in Lancaster, Seward, York, Hamilton, and Hall Counties. (Keith). COLORADO - Adults found in Kiowa Valley, Weld County; first adult in trap July 3. No eggs or larvae to July 11. This is second, possibly third, year pest has been established in State. Still confined to 10 to 15-square-mile area in Kiowa and Prospect Valleys. (Rothman et al.). Eggs and first instars in Kiowa Valley, Weld County. Egg masses on 30-40 percent of corn plants checked. (Johnson). KANSAS - One field in Elk County with 60 percent stalk infestation. All larvae pupated and about 50 percent of moths emerged. (Simpson). MISSOURI - Many adults and eggs on pollinating corn in southeast area. First to fourth instars infested 5-60 percent of corn. Mostly second instars. (Munson).

FALL ARMYWORM (Spodoptera frugiperda) - ILLINOIS - Damage continuing on late-maturing corn in most sections. Average about 15 percent infestations. (Ill. Ins. Rpt.). NEBRASKA - Infested 40+ percent of corn plants in field near Falls City, Richardson County. (Keith). KANSAS - Damaged sorghum ranged 8-40 percent in Harvey, Marion, and Dickinson Counties. (Simpson). OKLAHOMA - Damaged corn plants ranged 30-50 percent in Atoka, Coal, Pontotoc, Okfuskee, and Osage Counties. Damaged 85 percent of corn plants in Ellis County; 15 percent of sorghum plants in Jackson County and up to 5 percent in occasional field in Beaver County. Generally heavy in sorghum and corn through southwest and west-central areas. (Okla. Coop. Sur.). TEXAS - Widespread, medium populations damaged forage sorghum, Bermuda and lawn grasses in Jasper County; 1-2 larvae per forage plant detected in fields in area. (Gaskamp). ARKANSAS - Common on foliage of nonheading sorghum in Randolph County; light in other northeastern and east-central counties. (Ark. Ins. Sur.). ALABAMA - Larvae 1-5 in whorls in many isolated small spots of 2-10 pretassel cornstalks each in several Cherokee County cornfields. Much farther north than previously this season. Many nearly full grown. (Young et al.).

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - ARKANSAS - Very light as usual on early corn. (Boyer). MISSOURI - First to fourth instars on 35 percent of pollinating corn in southeast area; mostly second instars. Eggs and adults present. (Munson).

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - TEXAS - Heavy in Maverick County; damaging Sudan grass. One field of 91 acres completely killed. (Matthies, July 11).

STALK BORER (Papaipema nebris) - WISCONSIN - Larvae common on edges of many cornfields in Walworth, Rock, Dane, Columbia, Iowa, Grant, and Trempealeau Counties. Mostly third instar July 11 near Arlington, Columbia County. Infested up to half of plants in outside rows; more than one larva per plant rare. (Wis. Ins. Sur.).

WESTERN BEAN CUTWORM (Loxagrotis albicosta) - NEBRASKA - Two egg masses on 1 plant in Hamilton County field. Negative in Seward, York, and Hall Counties. (Keith). First egg mass this season on corn near Columbus, Platte County, July 11. (Kantor).

WESTERN CORN ROOTWORM (Diabrotica virgifera) - SOUTH DAKOTA - Emergence just underway in southern Lincoln County; infestations appear heavier than those of 1968. In untreated corn sampled in Lincoln and Clay Counties, damage to roots common. Larvae averaged 30 per root system. All stages present. (Jessen, Jones). WYOMING - Larvae declining. Ranged 2-27 per 10 sweeps in second-crop alfalfa in southeastern area. (Parshall). KANSAS - Adults reported emerging in Greeley County. (DePew). Larvae and pupae ranged 10-20 per plant on untreated plots. Adults collected in Sumner, Cowley, Elk, Chautauqua, Wilson, and Labette Counties. One per 50 plants. (Simpson). These are new county records. (PPC). OKLAHOMA - Adults noted emerging in untreated irrigated corn in Texas County; ranged up to 5 per plant. (Okla. Coop. Sur.).

NORTHERN CORN ROOTWORM (Diabrotica longicornis) - WISCONSIN - Overall population low but damaging, as high as 20 per root mass in individual fields in southern counties. (Wis. Ins. Sur.). KANSAS - Adults collected on corn in Elk County. Averaged less than 1 per 100 plants. This is a new county record. (Simpson).

CORN ROOTWORMS (Diabrotica spp.) - MINNESOTA - Mostly second instars in central and east-central districts. Hatch probably not complete but should be past peak. In about 66 percent of fields surveyed. Trace to 20 percent of roots damaged. (Minn. Pest Rpt.). ILLINOIS - Larvae continue to increase as hatch of overwintering eggs reaches peak, particularly in northern section. Pupation progressing rapidly in many fields, few adults emerged in western and central sections. Damage to roots evident and goosenecking of plants evident in few fields. (Sur. Bull.).

SORGHUM MIDGE (Contarinia sorghicola) - TEXAS - Heavy and spotty on late-planted grain sorghum of central areas. Some controls in Burleson County. Medium to heavy in late sorghum in Waller County. Noted in several fields in Blacklands area week ending July 11. (Green).

GARDEN SYMPHYLAN (Scutigerella immaculata) - OHIO - Moderate on field corn in 100-acre field in Lake County July 15. (Blair).

SMALL GRAINS

ENGLISH GRAIN APHID (Macrosiphum avenae) - NORTH DAKOTA - Ranged up to 15 per head on wheat and 3 per stem on oats in Sargent County. (Kaatz). MINNESOTA - Ranged 10-80 per row foot on small grain in east-central, central, west-central, and northwest districts. (Minn. Pest Rpt.). WISCONSIN - Very low in all counties surveyed; highest, 25 per sweep on oats. (Wis. Ins. Sur.).

HESSIAN FLY (Mayetiola destructor) - KANSAS - Preliminary estimate of loss to the 1969 wheat crop from spring generation nearly 2,000,000 bushels. (Somsen).

GRASSHOPPERS - TEXAS - Widespread and damaging rice in Jackson County near Edna. Ranged light to heavy in area and increasing as rice matures. (Wilson).

RICE STINK BUG (Oebalus pugnax) - TEXAS - Light to heavy and damaging rice throughout Jackson County. (Wilson).

BARLEY THRIPS (Limothrips denticornis) - NORTH DAKOTA - Adults and nymphs averaged 14 per leaf sheath in headed barley in Billings County. (Brandvik).

TURF, PASTURES, RANGELAND

SAGEBRUSH DEFOLIATOR (Aroga websteri) - NEVADA - Heavy with heavy damage to sagebrush (Artemisia tridentata) in Jiggs and Lamoille area, Elko County, and in areas of Humboldt County. (Artz).

GRASSHOPPERS - OHIO - Mixed populations of Melanoplus spp. and Conocephalus spp. building up in southern areas especially in hayfields and fence rows around cornfields; 10-15 per sweep common, ranged 50-75 nymphs per sweep in Pike County. (Richter).

SAY STINK BUG (Pitedia sayi) - NEVADA - Medium on grasses and mustard on rangeland throughout Diamond Valley, Eureka County. (Hampton, Peters).

SOUTHERN CHINCH BUG (Blissus insularis) - TEXAS - Heavy and widespread in Jackson and Brazos Counties, damaging San Augustine grass. (Wilson, July 11).

A PLANT BUG (Lopidea chelifer) - UTAH - Collected on Bassia spp. at Santa Clara, Washington County, June 12, 1969, by D.W. Davis and G.F. Knowlton. Determined by H.H. Knight. Also taken at Saint George in lesser numbers. This is a new State record. (Knowlton).

YELLOW SUGARCANE APHID (Sipha flava) - TEXAS - Light to medium and damaging Gordo bluestem grass in 3 pastures north of Edna, Jackson County. (Wilson).

SWEETPOTATO FLEA BEETLE (Chaetocnema confinis) - ARIZONA - Damaged dichondra lawns in Maricopa and Pima Counties during 1968 and 1969. Collected by J. May at Phoenix, Maricopa County, June 14, 1969. Determined by F.G. Werner. This is a new State record. (Ariz. Coop. Sur.).

A WIREWORM (Conoderus lividus) - SOUTH CAROLINA - In soil around roots of Coastal Bermuda grass at Brays Island, Beaufort County. Up to 5 larvae per shovelful of soil. About 8 acres out of 25 damaged. Determined by R.C. Fox. (Nettles, July 16).

AN ANT (Pogonomyrmex salinus) - UTAH - Collected at Kelton (northwest of Locomotive Springs) and 1.5 miles east of Kelton April 28, 1969, and in Kelton Pass May 13, 1969, all in Box Elder County, by G.F. Knowlton. Identified by R.E. Gregg. This is a new State record. (Knowlton, July 14).

FORAGE LEGUMES

PEA APHID (Acyrthosiphon pisum) - WASHINGTON - Up to 0.5 teacupful per sweep in alfalfa seed fields where control delayed in Lowden, Gardena, and Touchet area, Walla Walla County. Unusual number of pink forms in samples past few weeks. (Johansen, Eves). OREGON - Averaged 100 per sweep in second-growth alfalfa at Kiger Island, Benton County. (Westcott). WYOMING - Averaged 2,250 per sweep in one field in Washakie County. (Neys). Increasing in southeastern area. Ranged 9-1,800 per 10 sweeps. Average per 10 sweeps by county: Niobrara, 12; Laramie, 50; Platte, 183; Converse, 318; Goshen, 727. (Parshall). COLORADO - Low, 0-3,000 per 100 sweeps, on alfalfa in Logan, Sedgwick, Yuma, Washington, Cheyenne, and Kit Carson Counties, and in Arkansas Valley and Western Slope. (Johnson et al.). NEW MEXICO - Larvae averaged 7-30 per 25 sweeps of alfalfa at Espanola, Rio Arriba County. (Heninger). MASSACHUSETTS - Averaged 956 per 100 sweeps in 3 Hampshire County alfalfa fields July 9. (Miller).

YELLOW CLOVER APHID (Therioaphis trifolii) - MARYLAND - Light on clover May 14, 1969, at Webster, Harford County. Collected by J. Hellman. Determined by T. Bissell and F.W. Quednau. This is a new county record. (U. Md., Ent. Dept.).

CLOVER LEAFHOPPER (Aceratagallia sanguinolenta) - UTAH - Ranged 4-6 per 10 sweeps of alfalfa in Skull Valley, Tooele County, and Snowville, Box Elder County. (Knowlton, July 14).

MEADOW SPITTLEBUG (Philaenus spumarius) - WASHINGTON - Adults abundant in alfalfa at Pullman, Whitman County. (Johansen). WISCONSIN - Adults numerous in southern three-fourths of State. Nymphs still evident in Manitowoc, Kewaunee, Door, and Oconto Counties. (Wis. Ins. Sur.).

LYGUS BUGS (Lygus spp.) - NEW MEXICO - Averaged 15-25 per 25 sweeps of alfalfa at Espanola, Rio Arriba County. (Heninger). ARIZONA - Ranged 140-320 per 100 sweeps of alfalfa at Yuma, Yuma County. Averaged 49 adults and 25 nymphs per 100 sweeps of alfalfa at Safford, Graham County. (Pearson). COLORADO - Increasing slightly on alfalfa from 0-200 to 20-300 per 100 sweeps in Arkansas Valley. Ranged 50-100 per 100 sweeps in northeastern, east-central, and Western Slope

areas. (Burchett et al.). UTAH - Adults 16 per 10 sweeps on sweetclover in Snowville area of Box Elder County. (Knowlton, July 16). WASHINGTON - L. hesperus and L. elisus nymphs up to 60 per sweep in alfalfa seed fields where windy weather delayed controls in Lowden, Gardena, and Touchet area, Walla Walla County. (Johansen, Eves).

ALFALFA PLANT BUG (Adelphocoris lineolatus) - MISSOURI - Averaged 160 adults and nymphs per 10 sweeps in few ready-to-cut alfalfa fields in northwest area. (Hanning). WISCONSIN - Nymphs few, adults average 1-2 per sweep over most of State. (Wis. Ins. Sur.).

GARDEN FLEAHOPPER (Halticus bracteatus) - MARYLAND - Adults ranged 15-30 per sweep, caused yellowing of 40 acres of alfalfa in alfalfa-grass hay mixture near Woodbine, Howard County. (U. Md., Ent. Dept.).

ALFALFA WEEVIL (Hypera postica) - MASSACHUSETTS - Averaged 1.3 adults, 15.3 larvae per 100 sweeps in 3 alfalfa fields in Hampshire County July 9. (Miller). WISCONSIN - Ranged 30-50 per 100 sweeps of second-growth alfalfa July 10 in southeastern counties. As high as 16 per 100 sweeps in second-growth alfalfa July 11 in eastern Columbia County. Significant counts on regrowth alfalfa for rest of season unlikely. (Wis. Ins. Sur.). NORTH DAKOTA - Larvae ranged up to 90 (averaged 45) per 100 sweeps on first and second-crop alfalfa in McKenzie County. Adults ranged up to 10 (average 7) per 100 sweeps in same fields. No damage evident. (Brandvik). NEW MEXICO - Adults averaged 5-8 per 25 sweeps of alfalfa at Espanola, Rio Arriba County. (Heninger). COLORADO - Adults and larvae low and noneconomic on alfalfa. (Johnson). WYOMING - Larvae declining. Ranged 2-27 per 10 sweeps in second-crop alfalfa in southeastern area. (Parshall). OREGON - Larvae averaged 15 per sweep in second-growth alfalfa 3 feet high and in early bloom at Kiger Island, Benton County. Damage to leaves very evident. (Westcott).

GRASSHOPPERS (Melanoplus spp.) - WISCONSIN - M. femurrubrum (red-legged grasshopper) scarce or absent in most second-growth alfalfa; first and second instars numerous in few sparse alfalfa fields in sandy areas near Trempealeau, Spring Green, and Hancock. (Wis. Ins. Sur.). MISSOURI - Melanoplus spp. ranged 3-12 per square yard on alfalfa, red clover, and pastures in east-central and south-central areas. (Munson). Nymphs, mostly 8-14 per square yard on ready-to-cut alfalfa in northwest area. (Hanning).

A LEAF MINER FLY (Agromyza spiraeae) - MASSACHUSETTS - Averaged 1,892.3 per 100 sweeps of alfalfa in 3 Hampshire County fields July 9. (Miller).

SOYBEANS

BEET ARMYWORM (Spodoptera exigua) - ALABAMA - First to fourth instars medium to heavy and widespread in Baldwin County. More problems expected since controls ineffective. (Wilson).

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - ALABAMA - Some damage to soybeans in Barbour, Wilcox, and Shelby Counties. (Green et al.).

GARDEN FLEAHOPPER (Halticus bracteatus) - OHIO - Moderate in soybeans and alfalfa. Ranged 5-10 per sweep, especially in Clinton, Brown, and Pike Counties. (Richter).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - ALABAMA - Light lodging of 15 to 30-inch plants in Talladega and Cherokee Counties. Expected losses light. (Bass et al.).

PEANUTS

BEET ARMYWORM (Spodoptera exigua) - GEORGIA - Light to heavy in Seminole, Calhoun, and Tift County peanuts. (Hall et al.).

GRANULATE CUTWORM (Feltia subterranea) - GEORGIA - Infestations light to heavy across peanut belt. (French).

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - GEORGIA - Light to moderate on peanuts in Tift, Crisp, and Calhoun Counties. (French, Rogers)

A SPIDER MITE (Tetranychus sp.) - ALABAMA - Severe outbreak heavily damaged Geneva County peanut field. (Reynolds et al.).

COTTON

BOLL WEEVIL (Anthonomus grandis) - OKLAHOMA - Punctured squares ranged up to 12 percent in Beckham, Caddo, Kiowa, and Jefferson Counties; as high as 20 percent in Jackson County. Light in Bryan County. (Okla. Coop. Sur.). TEXAS - In McLennan and Falls Counties punctured squares averaged 8.2 (ranged 0-30) percent in 11 treated fields. Averaged 17.4 (ranged 0.7-45) percent in 37 untreated fields. (Cowan et al.). For Boll Weevil in High Plains area see page 582. LOUISIANA - In Madison Parish no weevils in 2 fields checked by row foot method. Square infestations ranged 1-24 (averaged 4.3) percent in 111 of 118 fields. Only 4 recovered from 145 wing traps on isolated island in Mississippi River. None on 28 wing traps on island road or on 10 wing traps placed near hibernation site and checked daily. Total weevils from all wing traps to date 2,696. (Cleveland et al.). ARKANSAS - Infested 2,830 or 43 percent of 6,564 fields. Only 120 fields or 1.8 percent at or above treatment level. (Boyer, Barnes). MISSISSIPPI - Punctured squares in 9 of 12 fields in delta counties. Averaged 1.0 (maximum 4.5) percent punctures. No weevils recovered from 28 wing traps; total to date 253. (Pfrimmer et al.). Infestations ranged 4-16 percent in 12 fields checked in Yazoo County. Live weevils found in 3 fields. Infestations very low in Monroe and Lee Counties; ranged 3-4 percent in fields checked. (Dinkins). TENNESSEE - Presently between generations, first-generation weevils hatching now. Punctured squares declined to 8 percent in fields found infested. Dry, hot weather causing high mortality of larvae and pupae all over regularly weevil infested portion of western cotton-growing area. (Locke). ALABAMA - "Hatchout" of first generation in few older fields in extreme northern area along Tennessee line. Most fields will show "hatchout" a week later. Second overlapping generation occurring in southern area. Recent rains and temperatures below 100+°F. favored survival and population explosion. Controls general in south and central areas. (McQueen). GEORGIA - Ranged 10-80 percent punctured squares in several fields in Turner County; 8 percent in one field in Worth County; second-generation adults emerging in southern areas. (Womack). SOUTH CAROLINA - Recovered 14 in 33 wing traps in 11 Florence County fields as of July 15; total 11,815. Hot and dry weather causing high mortality of first-generation larvae. (Taft et al.). Infested 0-4.9 percent of 1,002 acres in 72 fields at Hartsville, Darlington County, July 16. (Nettles).

A WEEVIL (Rhyssomatus palmacollis) - ARKANSAS - Collected in Lawrence County by Barnes July 3. Determined by E.P. Rouse. Previously collected on cotton in Lee, Logan, and Washington Counties. (Rouse).

BOLLWORMS (Heliothis spp.) - ARIZONA - Highest count of 6 eggs and 3 larvae found in 1 of 562 fields in Graham County. (Ariz. Coop. Sur.). NEW MEXICO - H. zea heavy, many eggs at Deming, Luna County, and Brazito, Dona Ana County. (Campbell). TEXAS - In McLennan and Falls Counties only infestations of economic importance in few irrigated fields in area. Averaged 2 (ranged 0-6.4) eggs and 3.7 (ranged 0-9.2) larvae per 100 terminals in 11 treated fields. In 37 untreated fields averaged 1.5 (ranged 0-7) eggs and 1.3 (ranged 0-17.5) larvae per 100 terminals. Injured squares averaged 4.9 (ranged 0-9) percent in 11 treated fields. In 37 untreated fields averaged 2 (ranged 0-28) percent. Of 513 larvae collected on

cotton 76 or 14.8 percent identified H. virescens. (Cowan et al.). In High Plains activity light in Crosby, Mitchell, and Dawson Counties. (Almand, Clymer, July 15). LOUISIANA - In Madison Parish damaged squares ranged 1-31 (averaged 7.3) percent in 108 of 118 fields. Ranged 1-20 (averaged 4.1) per 100 squares in 96 of above fields. Eggs ranged 1-19 (averaged 6) percent in 102 of 107 fields; larvae 1-71 (averaged 5.7) percent in 92 fields. Light damage to bolls in 5 of 53 fields. In blacklight trap collected 383 H. zea and 40 H. virescens. (Cleveland et al.). ARKANSAS - Infested 2,224 or 34 percent of 6,564 fields; 688 had eggs only; 829, larvae only; and 707, eggs and larvae. Above 8 percent damaged squares in 66 fields. H. zea up to 52 moths in light trap at Kelso, Desha County. Moth activity increased in field. (Boyer, Barnes). TENNESSEE - Continue to cause considerable damage over western area; few eggs and all larval instars found. As high as 16 larvae per 100 plants in one field in Hardeman County. Averaged 3 larvae per 100 plants in infested fields. (Locke). MISSISSIPPI - Increased in Yazoo County. All larval stages found in some fields. Ranged 3-8 percent in 12 fields checked. Very light in Lee and Monroe Counties. Third instar and larger larvae found. Egg counts very low. (Dinkins). In delta counties injured squares in 11 of 12 fields. Averaged 1.4 (maximum 4) percent injury. Moth catches increased in light traps. Increase in egg laying expected. In 50 sex lure traps recovered 15 H. zea; total to date 2,630. (Pfrimmer et al.). ALABAMA - Extremely large flight in most of State past 15 days produced serious infestation in many fields. Flight decreased to very low level week ending July 18. Third to late instars heavy and damaging in many fields in Cherokee, Madison, Jackson, and other northern counties where improper controls destroyed predators and parasites. Ranged 10-50 large larvae per 100 stalks in many fields. (McQueen). GEORGIA - Ranged 0-60 small larvae per 100 terminals in Tift County (Canerday); 6 eggs and 3 small larvae per 100 terminals in Worth County (Womack); 15 eggs and 5 larvae in Turner County (Canerday, Womack). Moths increased in light trap collections in Spalding County. (Beckham). SOUTH CAROLINA - Infested 0-1.8 percent of 1,002 acres in 72 fields at Hartsville, Darlington County; mostly below 0.5 percent. (Nettles, July 16). Recovered from light traps 74 H. zea; total to date 340. H. virescens 7; total to date 9. (Taft et. al.).

COTTON LEAF PERFORATOR (Bucculatrix thurberiella) - ARIZONA - Some fields in Yuma Valley, Yuma County, being treated. (Ariz. Coop. Sur.).

TARNISHED PLANT BUG (Lygus lineolaris) - MISSISSIPPI - Recovered 23 from 1 sex lure trap; total to date 147. (Pfrimmer et al.). ALABAMA - Persists and some damage continues to concern many growers in northern area. (McQueen).

LYGUS BUGS (Lygus spp.) - ARIZONA - Averaged 2 per 100 sweeps in 562 fields in Graham County. (Ariz. Coop. Sur.). ARKANSAS - Counts per 100 terminals: 1-19 in 4,959 fields, 20-39 in 83 fields, and 40 or more in 5 fields. (Boyer, Barnes).

COTTON FLEAHOPPER (Pseudatomoscelis seriatus) - OKLAHOMA - Moderate to heavy in many fields in southwest and west-central areas; moderate in Marshall County. (Okla. Coop. Sur.). TEXAS - Gradually increasing in most of reporting counties. Few High Plains counties reporting economic buildups. Crosby County reports up to 53 percent, Floyd County up to 27 percent. Lubbock, Hale, Hockley, Mitchell, and Bailey Counties report moderate infestations. Light in Swisher, Gaines, Lynn, Dawson, Howard, Garza, Yoakum, and Cochran Counties. (Almand, Clymer, July 15).

SPIDER MITES - TENNESSEE - Continue to increase in western area; weather very favorable for buildup. Remain confined to spots or along edges of fields. (Locke). ALABAMA - Only spotted infestations in Lowndes, Dallas, and Lauderdale Counties. (McCobe et al.). ARKANSAS - In 226 or 3.4 percent of 6,564 fields. (Boyer, Barnes).

TOBACCO

BUDWORMS (Heliothis spp.) - MARYLAND - Ranged 1-4 per 50 tobacco plants throughout southern area. (U. Md., Ent. Dept.). TENNESSEE - Damage to tobacco variable throughout Johnson County. (Walker).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - TENNESSEE - Damaging tobacco in several areas of Johnson County. (Walker).

GREEN PEACH APHID (Myzus persicae) - MARYLAND - Increasing but still light throughout Prince Georges, Calvert, Charles, Anne Arundel, and St. Marys Counties. (U. Md., Ent. Dept.).

SUGARBEETS

BEET ARMYWORM (Spodoptera exigua) - WYOMING - Ranged 0-6 per 100 sweeps in sugarbeets of Platte, Goshen, Laramie, and Niobrara Counties. (Parshall).

BEET WEBWORM (Loxostege sticticalis) - WYOMING - Larvae 0-14 per 100 sweeps in sugarbeets of Platte, Goshen, Laramie, and Niobrara Counties. (Parshall).

BEAN APHID (Aphis fabae) - WASHINGTON - Beginning to colonize sugarbeets July 10 at Toppenish, Yakima County. (Landis).

MISCELLANEOUS FIELD CROPS

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - ARIZONA - Larvae feeding in sunflower blooms at Dewey, Yavapai County. (Ariz. Coop. Sur.).

SUNFLOWER MOTH (Homoeosoma electellum) - SOUTH CAROLINA - Larvae collected from sunflower in Hampton County by C.A. Thompson June 18. Determined by R.C. Fox. This is new county record. (Thomas).

POTATOES, TOMATOES, PEPPERS

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - IDAHO - Few egg clusters, 137 larvae, and 3 adults on 5 row feet July 16 on treated experimental potato plots at Aberdeen, Bingham County. Some plants badly defoliated. (Carpenter). WEST VIRGINIA - Larvae ranged 10-18 per plant in 0.25-acre potato planting in Logan County. Moderate to heavy in other areas of State. (W. Va. Ins. Sur.).

GREEN PEACH APHID (Myzus persicae) - COLORADO - High on potatoes and tomatoes in Arkansas Valley. High enough to wilt potatoes in Otero County. Controls required on potatoes and tomatoes. (Burchett). PENNSYLVANIA - Moderate to very heavy in many potato fields in southeast area. Controls generally ineffective. (Gesell). RHODE ISLAND - Low on potato in Washington County. (Kerr).

TARNISHED PLANT BUG (Lygus lineolaris) - DELAWARE - Increasing on tomatoes in most areas. (Burbutis).

POTATO TUBERWORM (Phthorimaea operculella) - MICHIGAN - Field observations in Lenawee, Oakland, Monroe, and Livingston Counties show no indication of larval feeding as of July 11. Blacklight collections indicate small residue of moths in potato warehouse in Bay County. (Newman).

CABBAGE LOOPER (Trichoplusia ni) - NEVADA - Heavy on potatoes in Smith Valley, Lyon County. Required treatment. (Batchelder, Lauderdale).

TOMATO FRUITWORM (Heliothis zea) - ILLINOIS - More numerous than normal this year, and damage to developing tomatoes will likely be severe during August and into September over much of State. (Sur. Bull.).

BEANS AND PEAS

MEXICAN BEAN BEETLE (Epilachna varivestis) - COLORADO - Adults on beans in Weld, Boulder, Larimer, Montrose, and Delta Counties, and in Arkansas Valley. Eggs laid in all areas; larvae in Montrose and Delta Counties. (Burchett et al.). WYOMING - Adults and larvae ranged 0-26 per 100 row feet in Goshen, Platte, and Laramie Counties. Damage light. (Parshall). WEST VIRGINIA - Larvae ranged 6-8 per plant on green beans in Boone and Logan Counties. (W. Va. Ins. Sur.).

STRIPED FLEA BEETLE (Phyllotreta striolata) - NORTH DAKOKA - Adults ranged up to 80 per 100 sweeps on pinto beans in McKenzie County. Up to 100 percent of plants showed shotholing with up to 5 percent damage evident on some leaves. (Brandvik).

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - ALABAMA - Some damage to cowpeas in Barbour, Wilcox, and Shelby Counties. (Green et al.).

TARNISHED PLANT BUG (Lygus lineolaris) - DELAWARE - Increasing on lima beans in most areas. (Burbutis).

COLE CROPS

GREEN PEACH APHID (Myzus persicae) - WASHINGTON - Killed some plants in 55 acres of radish seed crop at Harrah, Yakima County. (Landis, July 15).

CABBAGE APHID (Brevicoryne brassicae) - CALIFORNIA - Medium on cauliflower plantings at Blythe, Riverside County. Spotty and generally not so prevalent as usual. (Cal. Coop. Rpt.).

IMPORTED CABBAGEWORM (Pieris rapae) - WISCONSIN - Larvae becoming evident in Waushara, Calumet, and Price Counties. Eggs numerous at site near Hancock, Waushara County. (Wis. Ins. Sur.).

CUCURBITS

STRIPED CUCUMBER BEETLE (Acalymma vittatum) - COLORADO - Adults much reduced; damaging only in few cantaloup fields in Arkansas Valley. (Burchett). ALABAMA - Adults very heavy, damage serious to cucumbers over most of 300+ acres in De Kalb County. Five to 25 percent of vines dying in many fields, harvest near peak. High populations expected to develop and be present next season. (Moore et al.).

CORN ROOTWORMS (Diabrotica spp.) - NEBRASKA - D. virgifera (western corn rootworm) ranged 2-3 per flower, D. longicornis (northern corn roctworm) and D. undecimpunctata howardi (spotted cucumber beetle) 1-2 on squash planting near Mead, Saunders County. (Jansen, Keith).

SQUASH BUG (Anasa tristis) - TEXAS - Eggs, nymphs, and adults heavy on squash and cucumbers in Wilbarger County. (Boring, July 11).

GENERAL VEGETABLES

BEET LEAF MINER (Pegomya betae) - WASHINGTON - Increasing on beets July 10 at Toppenish, Yakima County. (Landis).

ONION MAGGOT (Hylemya antiqua) - WISCONSIN - Problem on onions in Price, Vilas, and Kewaunee Counties. (Wis. Ins. Sur.).

ONION THRIPS (Thrips tabaci) - COLORADO - Up to 60 per onion plant in Arkansas Valley and 20-40 per plant on Western Slope. Controls applied. (Burchett, Bulla).

DECIDUOUS FRUITS AND NUTS

ORIENTAL FRUIT MOTH (Grapholitha molesta) - SOUTH CAROLINA - Heavy twig injury in some peach blocks at Ridge Springs, Saluda County. (Nettles, July 16). CONNECTICUT - Larval injury heavy to unprotected peaches. (Kollas, July 15). RHODE ISLAND - Much damage to unsprayed peaches in Providence County. (King).

CODLING MOTH (Laspeyresia pomonella) - ARIZONA - Damaged apples on untreated trees at Safford, Graham County. (Ariz. Coop. Sur.). COLORADO - Larvae caused little damage in apple and pear orchards where good spray programs followed. Third cover spray completed in Delta, Montrose, Mesa, and Garfield Counties. (Bulla). WISCONSIN - Caught 9 moths July 10-16 at Madison, Dane County. (Wis. Ins. Sur.).

PEACH TWIG BORER (Anarsia lineatella) - COLORADO - Larvae appearing, mostly light, in few peach orchards; control good in majority of orchards. (Bulla).

RED-HUMPED CATERPILLAR (Schizura concinna) - UTAH - Defoliated twigs on apple trees at Springville, Utah County. (Knowlton, July 16).

PLUM CURCULIO (Conotrachelus nenuphar) - OKLAHOMA - Damaged all peaches in untreated Payne County orchard; half of larvae left fruit to pupate. (Okla. Coop. Sur.). WISCONSIN - First instar to half-grown larvae in about 5 percent of cherries at Middleton, Dane County. (Wis. Ins. Sur.).

APPLE MAGGOT (Rhagoletis pomonella) - RHODE ISLAND - Occasional adult in Washington County. (Field). CONNECTICUT - Emergence slow except at Storrs, Tolland County. (Kollas, July 15). WISCONSIN - Few flies in Dane and Washington County traps. (Wis. Ins. Sur.). MINNESOTA - First fly in trap near Stillwater, Washington County. Emergence late this season. (Minn. Pest Rpt.).

WHITE PEACH SCALE (Pseudaulacaspis pentagona) - FLORIDA - Second generation on unsprayed peaches at Gainesville, Alachua County: Females 5 percent, second sedentary stage 60 percent, first sedentary stage 35 percent; no crawlers or eggs. (Kuitert).

PEAR PSYLLA (Psylla pyricola) - RHODE ISLAND - Infested many trees statewide; much injury. (Field, July 16).

PEAR-SLUG (Caliroa cerasi) - PENNSYLVANIA - Abundant on pears locally in Susquehanna County; 20-50 percent defoliation common in untreated trees. (Gesell).

EUROPEAN EARWIG (Forficula auricularia) - PENNSYLVANIA - Ranged 24-36 in crotch of crab apple tree July 12 at Feasterville, Bucks County. (Simons). This is new county record. (PPC).

SPIDER MITES - COLORADO - Tetranychus urticae (two-spotted spider mite) building up in all fruit areas on Western Slope, where previous control not obtained. Ranged 50-200 per leaf in heavy infestations; leaves browned in some orchards. Panonychus ulmi (European red mite) light to moderate in Delta County orchards. (Bulla). RHODE ISLAND - P. ulmi low. T. cinnabarinus (carmine spider mite) low in Providence County. (King).

FALL WEBWORM (Hyphantria cunea) - TEXAS - Larvae moderate and damaging pecan trees in Val Verde County. (Neeb).

HICKORY SHUCKWORM (Laspeyresia caryana) - ALABAMA - Light to medium drop of small nuts continues in Wilcox, Baldwin, Mobile, and Lee Counties due to small larvae, dry weather, and other causes. (Farquahar et al.).

AN APHID (Panaphis juglandis) - CALIFORNIA - Collected on walnut for new county records. At Stockton, San Joaquin County, by J.L. Loos June 2, 1969. At Camino, El Dorado County, by M.W. Petach July 3, 1969. (Cal. Coop. Rpt.).

CITRUS

EUROPEAN EARWIG (Forficula auricularia) - CALIFORNIA - Heavy on lemon trees at Fallbrook, San Diego County. (Cal. Coop. Rpt.).

A LEAFHOPPER (Homalodisca coagulata) - TEXAS - Light in Val Verde County. (Neeb).

SMALL FRUITS

WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) - ARIZONA - Treatments required in most grape plantings at Safford, Graham County. (Ariz. Coop. Sur.).

GRAPE ROOT BORER (Vitacea polistiformis) - SOUTH CAROLINA - Damage in Union County. Completely destroyed all feeder roots in some instances. (Thomas, July 16).

A SPHINGID MOTH (Sphecodina abbottii) - FLORIDA - Adult collected in blacklight trap in Liberty County by H.V. Weems July 5 for a new county record. First record listed in Gadsden County July 7, 1961. (Fla. Coop. Sur.).

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus) - CALIFORNIA - Adults of this and B. sulcatus (black vine weevil) medium on strawberries at Tulelake, Siskiyou County. (Cal. Coop. Rpt.).

A PLANARIAN FLATWORM (Geoplana mexicanum) - CALIFORNIA - Medium on strawberry plants at Sonora, Tuolumne County. (Cal. Coop. Rpt.).

ORNAMENTALS

A PSYCHID MOTH (Apterona crenulella) - NEVADA - Collected on weeds and ornamentals at Genoa, Douglas County. (Marshall). This is a new county record. (Bechtel).

FLETCHER SCALE (Lecanium fletcheri) - WISCONSIN - Hatch complete on arborvitae at Middleton, Dane County, by July 16. Most crawlers emerged. Much lower than usual in Dane County. (Wis. Ins. Sur.).

CARMINE SPIDER MITE (Tetranychus cinnabarinus) - ARIZONA - Heavy on violets at Tucson, Pima County. (Ariz. Coop. Sur.).

BROWN GARDEN SNAIL (Helix aspersa) - OREGON - Damaged nursery stock at Medford, Jackson County. Steadily on increase for several years. (Larson).

FOREST AND SHADE TREES

PINE TUSSOCK MOTH (Dasychira plagiata) - WISCONSIN - About 70 percent of larvae pupated; rest, sixth instars spinning cocoons July 10. (Wis. Ins. Sur.). MINNESOTA - About 30 percent pupated in east-central area. High counts still persist in this area; 1970 control program possible. (Minn. Pest Rpt.).

JACK-PINE BUDWORM (Choristoneura pinus) - WISCONSIN - About 40 percent pupated in Douglas County July 10. Some pupae in Douglas and Bayfield Counties by July 5; little or no defoliation. Third to fifth instars in Vilas County. Pupation just beginning July 9 in Marinette County. (Wis. Ins. Sur.).

NANTUCKET PINE TIP MOTH (Rhyacionia frustrana) - KANSAS - Infested 50-60 percent of commercial pines in Sedgwick and Cowley Counties. (Redding).

A PINE NEEDLE-SHEATH MINER (Zelleria haimbachi) - OREGON - Damage above normal to home and Christmas tree plantings in Clackamas and Multnomah Counties. Damage severe locally to native ponderosa pines at Medford, Jackson County. (Larson).

BLACK PINE-LEAF SCALE (Nuculaspis californica) - CALIFORNIA - Heavy on lodgepole pines at Avenal, Kings County. (Cal. Coop. Rpt.).

LARCH SAWFLY (Pristiphora erichsonii) - MARYLAND - Collected on larch planting in Anne Arundel County by J. Hellman May 24, 1969. Determined by D.R. Smith. This is a new county record. (U. Md., Ent. Dept.).

ADELGIDS - WISCONSIN - Pineus strobi (pine bark aphid) numerous on white and red pine transplants in Wood County July 8. Adelges cooleyi (Cooley spruce gall aphid) began emerging July 7 from specimens collected at Cedarburg, Ozaukee County. (Wis. Ins. Sur.).

MIMOSA WEBWORM (Homadaula anisocentra) - OKLAHOMA - Lightly damaged mimosa at Shawnee, Pottawatomie County, for a new county record. Heavy on Mayes County mimosa. (Okla. Coop. Sur., July 12). ALABAMA - Webbing and defoliation light to heavy on mimosa and honeylocust trees in Chambers, Clay, Etowah, De Kalb, Calhoun, Randolph, Cleburne, and Cherokee Counties. (McQueen). TENNESSEE - Webbing and discoloration increasing throughout western areas. (Locke). OHIO - Very heavy on honeylocust south of line from northern Preble County to southern Pickaway County. Infestations of 90 percent common. (Richter). WEST VIRGINIA - Damage heavy to mimosa and honeylocust in Monongalia, Hampshire, Hardy, and Mineral Counties. Heavy in Boone and Logan Counties. (W. Va. Ins. Sur.). DELAWARE - Very abundant on mimosa and honeylocust in many areas. (Burbutis).

ARCTIID MOTHS - NEW MEXICO - Hyphantria cunea (fall webworm) appearing heavy on poplars at Alamogordo, Otero County. Citywide spraying being carried out. (N.M. Coop. Rpt.). ARKANSAS - H. cunea webs light in northwestern area. (Boyer). MISSOURI - Small H. cunea webs with small larvae over southern two-thirds of State. (Munson et al.). OHIO - Halisidota caryae (hickory tussock moth) larvae moderate to heavy on shagbark hickory on 45-acre woodland in Licking County. (Bower).

PEACH TREE BORER (Sanninoidea exitiosa) - PENNSYLVANIA - Infested most trees, girdled many, in about 500 weeping flowering cherry trees 1-4 inches in diameter in nursery at Manchester, York County. Most borers emerged; some still in larval and pupal stages. (Sleeman, July 11).

WHITE-MARKED TUSSOCK MOTH (Hemerocampa leucostigma) - WISCONSIN - Adults began emerging July 7 at De Forest, Dane County. Final instars still present July 16. (Wis. Ins. Sur.).

ELM LEAF BEETLE (Pyrrhalta luteola) - COLORADO - Adults and larvae damaging at Greeley, Weld County. Controls recommended for large infestations. (Urano). NEW MEXICO - Moderately heavy; skeletonizing Siberian elms at Santa Cruz, Santa Fe County, and Espanola, Rio Arriba County. (Heninger). TEXAS - Light to moderate on Chinese elms in Hudspeth, Martin, Crockett, and Reagan Counties. (Neeb). ARKANSAS - Very heavy in east-central and northeastern areas. Damage severe on all leaves on many elms. Mostly larvae and pupae on ground. (Boyer). ALABAMA - Larval and adult defoliation heavy on elms on lawns and streets in Greene, Morgan, Clay, Chambers, Etowah, Calhoun, De Kalb, Randolph, Cherokee, and Cleburne Counties. (Rutledge et al.).

CHRYSOMELID BEETLES - OKLAHOMA - Calligrapha scalaris (elm calligrapha) heavy on Blaine County elms. (Okla. Coop. Sur.). NORTH DAKOTA - Up to 30 Chrysomela scripta complex (cottonwood leaf beetles) larvae per leaf on poplar and 5 per leaf on willow, damaged seedlings at nursery at Oakes, Dickey County. (Kaatz). MINNESOTA - Phytodecta pallida larvae heavy on some plantings in nursery near Owatonna, Steele County. (Minn. Pest Rpt.). OHIO - Xenochalepus dorsalis (locust leaf miner) larvae nearly completed feeding. Black locust rust-brown color. Heaviest injury appears in Scioto County. Browning will worsen until about first week in August. (Richter).

NATIVE ELM BARK BEETLE (Hylurgopinus rufipes) - WISCONSIN - Summer brood July 10 in Menominee County: 60 percent pupae; 35 percent larvae; rest, callow adults in pupal cells. Spring brood still laying eggs; some fully developed larvae; no pupae. Flying adults still collected on tanglefoot traps on healthy elms. (Wis. Ins. Sur.).

CICADAS - OKLAHOMA - Tibicen sp. emergence heavy in Texas County, especially at Guymon. (Okla. Coop. Sur.). WEST VIRGINIA - Damage by Brood IX of Magicicada septendecim (periodical cicada) heaviest southeast of Williamsburg, Greenbrier County; heavily damaged 80-90 percent of trees. (W. Va. Ins. Sur.).

AN APHID (Stegophylla quercina) - MARYLAND - Severely damaged large Quercus falcata at Pasadena, Anne Arundel County. Collected by W.C. Harding June 3, 1969. Collected from willow oak at Riverdale, Prince Georges County, by T.L. Bissell June 6. Determined by F.W. Quednau. These are new State and county records. (U. Md., Ent. Dept.).

APHIDS - MARYLAND - Following new county records collected by T.L. Bissell and determined by F.W. Quednau. Periphyllus californiensis on Japanese maple May 6 at Hyattsville, Prince Georges County. Prociphilus fraxinifolii light on ash June 7 at College Park, Prince Georges County. Myzocallis exultans on pin oak June 2 at Hyattsville, Prince Georges County, and on willow June 6 at Riverdale. (U. Md., Ent. Dept.).

AN ARMORED SCALE (Phenacaspis nyssae) - FLORIDA - All stages infested stems and leaves of swamp tupelo trees in nursery at Spring Creek, Liberty County. Collected by R.H. Miller June 26. This is a new county record. (Fla. Coop. Sur.).

PLANT BUGS (Tropidosteptes* spp.) - OREGON - T. pacificus severely browned ash leaves at Salem, Marion County. Nymphs most prevalent. (Westcott). MINNESOTA - Second-generation T. amoenus (ash plant bug) nymphs at Minneapolis and St. Paul. (Minn. Pest Rpt.).

MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - One case reported in U.S. July 13-19 as follows: TEXAS - Comal County. Total of 194 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico July 6-12 as follows: Baja California 1, Sonora 75, Chihuahua 58, Coahuila 4, Nuevo Leon 12, Tamaulipas 44. Total of 11 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 52,632,000; New Mexico 2,560,000; Arizona 10,720,000; California 700,000; Mexico 110,560,000. (Anim. Health Div.).

FACE FLY (Musca autumnalis) - WASHINGTON - Annoying around feedlot at Ritzville, Adams County. (Hintze). OKLAHOMA - Averaged 10 per face in herd at Tahlequah, Cherokee County. (Okla. Coop. Sur.). ARKANSAS - Collected in Benton County by Lancaster July 10, 1969. Determined by E.P. Rouse and J. Brown. This is a new State record. As high as 30 per face. (Lancaster). MISSOURI - Up to 15 (average 3) per face in south-central and southwestern areas. (Peters). Averaged 11.5 per face on northwestern area 10-cow herd; averaged 7 per face on 8 calves. Averaged 6.3 per face on north-central area 12-cow herd. (Hanning). ILLINOIS - Average per face on cattle by district: Southeast 6.1, west-southwest 25.9, southwest 14.1, northwest 5.3. (Ill. Ins. Rpt.). WISCONSIN - Moderate on cattle in all areas. Noticeable increase likely this week. (Wis. Ins. Sur.). OHIO - Adults remained moderate. Moderate to low in Wayne County on faces; many on backs. (Lang). MARYLAND - Ranged 0-30 per face of dairy cattle in central counties. (U. Md., Ent. Dept.).

HOUSE FLY (Musca domestica) - OKLAHOMA - Very heavy around cattle and feed troughs in Texas County feedlot. Averaged 10 per Scudder grid in untreated barns in Payne County. (Okla. Coop. Sur.). WISCONSIN - Moderate; increasing. (Wis. Ins. Sur.).

*Carvalho, J.C.M. 1959. Catalogue of the Miridae of the World. Part IV. Subfamily Mirinae. 384 pp.

A MUSCID FLY (Muscina stabulans) - WASHINGTON - Annoying around feedlot at Ritzville, Adams County. (Hintze).

HORN FLY (Haematobia irritans) - TEXAS - Moderate to heavy July 11 on livestock in Crockett, Jeff Davis, and Brewster Counties. Currently moderate on cattle in Crockett and Hudspeth Counties; light on sheep in Crockett County. (Neeb). OKLAHOMA - Ranged 400-600 per head in Payne County; heavy in Mayes, Garvin, and Marshall Counties. (Okla. Coop. Sur.). MISSOURI - Up to 25 per treated animal. Counts on untreated animals 300+ in south-central and southwestern areas. (Peters). Up to 25 per side on northwestern area 10-cow herd; 3-30 per side on 8 calves. Up to 10 per side on north-central area 12-cow herd. (Hanning). ILLINOIS - Average per head of cattle by district: Southeast 305, west-southwest 130.9, southwest 239.0. (Ill. Ins. Rpt.). WISCONSIN - Moderate on cattle in all areas. Noticeable increase likely this week. (Wis. Ins. Sur.).

STABLE FLY (Stomoxys calcitrans) - WASHINGTON - Annoying around feedlot at Ritzville, Adams County. (Hintze). OKLAHOMA - Ranged 4-5 per head on cattle in Payne County; heavy in Mayes County. (Okla. Coop. Sur.). MISSOURI - Up to 15 (averaged 5) per animal in south-central and southwest areas. (Peters). ILLINOIS - Average per head of cattle by district: Southeast 2.9, west-southwest 23.6, southwest 0.9. (Ill. Ins. Rpt.). WISCONSIN - Severe annoyance to cattle in Jefferson, Bayfield, Columbia, and Calumet Counties. Moderate elsewhere. Some spraying for this fly. (Wis. Ins. Sur.).

MOSQUITOES - TEXAS - During June, Aedes sollicitans was absent from Port Arthur area; mass flights of Culex salinarius occurred in county and of Psorophora confinnis occurred on west side of Beaumont. (Jefferson Co. Mosq. Control Dist.). MINNESOTA - At Minneapolis and St. Paul for week ending July 12, 37 evening bite collections collected 184 adults. Of these, 117 were Aedes vexans, 23 Mansonia perturbans, and 19 Aedes cinereus. Of 2,164 adults in 224 daytime bite collections, A. vexans 38 percent and Mansonia 25 percent. A. vexans in over half of larval collections, followed by Culex territans. Of 5,681 females in 16 light traps, A. vexans accounted for 3,072 and Mansonia 2,075. Mansonia probably peaked July 10-15. Adults still emerging and will continue to annoy acutely for 3-4 weeks. Heavy rains July 13 and 15 started 2 new broods of A. vexans. Storm conditions aided distribution of adult A. vexans from breeding sites, so that heavy populations now statewide. Nuisance peaked. Control not effective and will not be as long as dispersal occurs. (Minn. Pest Rpt.). WISCONSIN - Biting severe and widespread except in those counties west and northwest of Eau Claire and in parts of few southwestern counties. Control underway in most cities. Biting likely to intensify next 7-14 days, then begin to drop abruptly as pools dry. Heavy rain in Price and Vilas Counties July 15 will probably extend problem there well into August. Different species predominate in different areas, but in western Dane County Aedes vexans, A. excrucians, A. trivittatus, Wyeomyia smithii, and Culex pipiens all present. Mosquitoes annoying livestock, deer, and humans. (Wis. Ins. Sur.). OHIO - Building up to nuisance levels across State, due to July 4 rains. Bites 150 per hour at Port Clinton, Ottawa County, at dusk. High numbers on low ground in Montgomery County. Very troublesome in Wayne County. Mostly A. vexans females collected at Wooster, Wayne County. (Richter). RHODE ISLAND - Aedes spp. and Culex spp. heavy in Washington County. (Field, July 17).

TABANID FLIES - VERMONT - Tabanus quinquevittatus ranged 15-20 per animal in some areas. (Nielsen, July 16). WISCONSIN - Deer flies numerous near water in all areas, particularly in north. (Wis. Ins. Sur.). MINNESOTA - Deer flies and horse flies very numerous in and adjacent to wooded areas. (Minn. Pest Rpt.).

WESTERN BLOODSUCKING CONENOSE (Triatoma protracta) - ARIZONA - Annoying homeowners in Skull Valley area, Yavapai County. (Ariz. Coop. Sur.).

AMERICAN DOG TICK (Dermacentor variabilis) - TENNESSEE - Remains pest in western area. (Locke).

BROWN RECLUSE SPIDER (Loxosceles reclusa) - MISSOURI - Collected from building in Gentry County by D. Null for a new county record. (Hanning).

HOUSEHOLDS AND STRUCTURES

LARGE ASPEN TORTRIX (Choristoneura conflictana) - MINNESOTA - Mostly this species accumulating in high numbers around lights and homes from large flights at Duluth, St. Louis County. (Minn. Pest Rpt.).

MISCELLANEOUS WILD PLANTS

GRASSHOPPERS - FLORIDA - Nymphs, mostly Schistocerca obscura, severe in 2 large areas on Everglades Experiment Station June 27, 1969. Development 2-3 weeks earlier than normal. Heaviest, 15-30 second to last instars per sweep, in 40 acres of elderberry (Sambucus simpsonii) scrub; bushes 50+ percent defoliated. Larger nymphs heavily debarked bushes although ample foliage available. Few S. obscura adults noted. Also infested old 15-acre planting of ramie (Boehmeria nivea). Population 98+ percent S. obscura. Few Paroxya sp., Dichromorpha viridis, Tryxalis brevicornis, Chortophaga viridifasciata australior, and Romalea microptera (eastern lubber grasshopper) also present. S. obscura infestation in ramie about half that in elders, but higher percentage of very young nymphs indicated possibility of population equalling that in elderberry stand. Elderberry is noneconomic wild host and ramie is no longer economic crop in State. Due to noneconomic status of hosts, controls not contemplated. Infested area is original release site of the northern Indian black francolin, a game bird. Cultural control would destroy usefulness of area as a francolin covert and probably drive birds to less desirable habitat. By July 3, grasshoppers had completely defoliated 40-acre elderberry stand and were moving to pastures and sorghum fields. (Genung, Janes, Lewis).

BENEFICIAL INSECTS

LADY BEETLES - OKLAHOMA - Mostly Hippodamia convergens (convergent lady beetle) up to 2-5 per sorghum plant infested with Rhopalosiphum maidis (corn leaf aphid) in panhandle area and as low as 1 per 10 plants in fields with low aphid activity. (Okla. Coop. Sur.). WYOMING - Lady beetles increasing. Adults and larvae 2-26 per 10 sweeps on southeastern area second-crop alfalfa. (Parshall). IDAHO - Chilocorus stigma (twice-stabbed lady beetle) preying on Pulvinaria innumerabilis (cottony maple scale) July 15 at Boise, Ada County. (Peterson).

A DAMSEL BUG (Nabis sp.) - WYOMING - Averaged 9 per 10 sweeps on southeastern area second-crop alfalfa. (Parshall).

BRACONIDS (Aphidius spp.) - WASHINGTON - Up to 12 aphid mummies per alfalfa branchlet in seed fields moderately to heavily infested with Acyrthosiphon pisum (pea aphid) in Walla Walla County. (Johansen, Eves). IDAHO - A. pulcher suppressed pea aphid in Post Falls, Kootenai County, alfalfa hay fields. (Stranahan).

ALKALI BEE (Nomia melanderi) - WASHINGTON - Best adult population in Lowden, Gardena, and Touchet area, Walla Walla County, in 5 years; new nesting sites filling up well. (Johansen, Eves).

A LEAFCUTTING BEE (Megachile rotundata) - WASHINGTON - Nesting delayed by windy, cool weather; most units incubated June 15-20 just beginning to fill tunnels; those incubated June 1 filled well following hot weather of early June. (Johansen, Eves).

A CINNABAR MOTH (Tyria jacobaeae) - WASHINGTON - In site of 1966 release at Amboy, Clark County, damage heavy July 14 to acre of tansy ragwort. (Shanks).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

BOLL WEEVIL (Anthonomus grandis) - TEXAS - In High Plains area, light in Mitchell County; overwintered adults starting to lay eggs. Punctured cotton squares in many Dickens and Kent County fields. (Almand, Clymer, July 15). For Boll Weevil in other areas see page 573.

CEREAL LEAF BEETLE (Oulema melanopus) - OHIO - Larva on oats at Kitts Hill, Lawrence County, and adults on oats at Patriot, Gallia County, for new county records. Collected by J.R. Eibling July 3. Determined by R.E. White. (PPC). MICHIGAN - Heavier than in 1968 north of 45th parallel in State. Light to moderate July 8 in 11 Emmet County oatfields. Five adults and 351 larvae in 250 sweeps. (Hanna). Larvae 2-20 and summer adults 1-2 per 100 sweeps in Macomb County oatfields. Absent on roadside grasses. (Moore, July 14).

EUROPEAN CHAFER (Amphimallon majalis) - CONNECTICUT - Adults light in blacklight trap at Middletown, Middlesex County, for a new county record. Collected by C. Zieminski July 11. Determined by L.K. Russell. (PPC).

GRASSHOPPERS - WASHINGTON - Melanoplus sanguinipes, Oedaleonotus enigma, and Aulocara elliotti averaged 8-35 per square yard in all areas below. Economic on 1,600 acres of private rangeland, east of Central Ferry, north of Alpowa, and southwest of Pomeroy in Garfield County. On 1,800 acres of private rangeland southwest of Pullman at Wawawai, Whitman County. On 2,000 acres of private rangeland between Wilbur and Keller Ferry, Lincoln County. (Nonini, Nishimura). NEVADA - M. sanguinipes heavy, up to 60 per square yard, mainly on alfalfa but also on grain in Diamond Valley, Eureka County. About 2,500 acres treated. (Gallaway et al.). M. sanguinipes 10-30 per square yard and M. bivittatus 5-8 per square yard in abandoned alfalfa fields in Reese River, Lander County. (Hampton). UTAH - Grasshoppers ranged 35-125 per square yard of alfalfa 3 days after heavy kill by spray on small farm surrounded by rangeland in Skull Valley, Tooele County. Several species migrating into farm. Ranged 3-25 per square yard on rangeland north and south of farm. Scattered reports of damage in valley. (Knowlton, July 14). OKLAHOMA - Heavy in sorghum margins in scattered areas of Beaver County. M. differentialis, M. bivittatus, Hesperotettix speciosus, and Aeoloplides turnbulli bruneri noted. Mostly M. differentialis heavy in irrigation ditches and cotton field margins in Grady County. (Okla. Coop. Sur.). MINNESOTA - M. femurrubrum still hatching. Low in most areas except in Chisago County where up to 8 per square yard common on roadsides. First to third instar M. bivittatus and M. sanguinipes averaged 6 per square yard on roadsides in Wilkin County; high of 32 per square yard in central part. Development rapid in sandy soil areas north of Minneapolis and St. Paul. Adult M. sanguinipes and fourth to fifth instar M. bivittatus present; M. femurrubrum and M. differentialis in first to third instar. Movement into crops spotty. Roadside mowing forced some movement into corn and soybeans in Carver, Anoka, and Chisago Counties. Margin feeding light. Very low in northwest district. (Minn. Pest Rpt.).

JAPANESE BEETLE (Popillia japonica) - MISSOURI - Adults taken from traps at five St. Louis locations. (Thompson, July 9). TENNESSEE - Adults light at Clarksville, Montgomery County. (PPC). Adults heavily damaged cultivated and wild grapes and sassafras foliage in Buntontown and Dry Run areas of Johnson County; homeowner complaints numerous. (Walker, Snodgrass). MICHIGAN - First adult of season trapped June 26 at Warren, Macomb County; second specimen July 8 at Roseville. Only finds to date. (Moore, July 14). MARYLAND - Injured 1-5 percent of 150 acres of soybeans at Talbot, Queen Annes County. (U. Md., Ent. Dept.). RHODE ISLAND - Adults exceedingly heavy in many areas. (Field, July 17).

MEXICAN FRUIT FLY (Anastrepha ludens) - TEXAS - Larvae detected in peaches and sour oranges in Webb County during June; believed first record in peaches in county. (PPC South. Reg.).

PINK BOLLWORM (Pectinophora gossypiella) - CALIFORNIA - Trap catches in Coachella Valley week ending July 18 yielded 419 sterile and 192 native moths. Fifty native moths recovered from 1 field. About 200 acres of "hot spots" treated. Released 663,800 sterile moths in Coachella Valley; 23,100 at Borrego Springs; 85,000 in Kern County. ARIZONA - Sterile moth releases started in 17-acre isolated field at Redington, Pima County, with 5,500 sterile moths July 16. (PPC). Infested 20 percent of some northern valley cotton fields at Yuma, Yuma County. (Ariz. Coop. Sur.).

SOYBEAN CYST NEMATODE (Heterodera glycines) - ARKANSAS - Ten cysts in soil on farm in Yell County for a new county record. Collected by J.H. White July 7. Confirmed by A.M. Golden. (PPC).

SWEETPOTATO WEEVIL (Cylas formicarius elegantulus) - LOUISIANA - Heavy; about 10,000 bushels of sweetpotatoes in 2 kilns in St. Landry Parish had to be destroyed July 11. (PPC South. Reg.).

WEST INDIAN SUGARCANE ROOT BORER (Diaprepes abbreviatus) - FLORIDA - Through June, 7,320 acres of commercial and dooryard citrus surveyed in Orange, Seminole, and Lake Counties. Survey to be continued within 25-mile radius of infestations. Delimiting inspections made on 859 acres between Apopka and Plymouth infestations; all survey outside of known infested area negative. (PPC South. Reg.).

HAWAII INSECT REPORT

New State Record - Adult of a NOCTUID MOTH (Melipotis ochrodes) captured on wall of building at Honolulu (Manoa) by J.W. Beardsley June 8, 1969, for a new State record. Five adults taken from light traps at Hickam Air Force Base June 18 and at Honolulu International Airport June 23 by E. Shiroma. Four adults collected at light in Lihue, Kauai, by D. Sugawa June 18 for a new island record. Determined by E.L. Todd. Widely distributed in tropical America (i.e. Mexico, Jamaica, San Domingo and Venezuela (PPC)). Feeds on foliage of Prosopis pallida (kiawe) and 2 other species of Prosopis and Leptoglottis portoriciensis in Puerto Rico. (Chong, Olson). Adults about 1 per 100 square feet on Desmanthus growths adjacent to Keehi Lagoon Park at Honolulu and on Sand Island, Oahu. (Au, Funasaki, July 4). Light traps past 2 weeks indicate adults widespread from Ewa to Honolulu, Oahu. (Shiroma).

General Vegetables - GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) heavy to severe in bittermelon fields at Waimanalo, Waianae, and north shore areas on Oahu; negligible in bittermelon field at Pearl City. Heavy to severe in snap bean fields at Waianae, Waimanalo, and Pupukea, Oahu. (Yamamoto). BEET ARMYWORM (Spodoptera exigua) larvae infesting about 4 leaves per green onion plant in most fields at Waianae, Waimanalo, and Kahuku, Oahu. (Funasaki). LEAF MINER FLIES (Liriomyza spp.) generally medium in watermelon fields at Kahuku and Waianae, Oahu; light at Waimanalo. Light to medium on green onions at Waianae, Koko Head, and Kahuku; heavy in some fields at Waimanalo. Severe on dishcloth gourd (seequa) at Pupukea. Heavy in tomato fields at Kahului, Maui. (Funasaki, Miyahira). BEAN FLY (Melanagromyza phaseoli) generally trace to light in commercial soybeans, yard-long and snap bean fields throughout Oahu. (Wong, Au). TOBACCO FLEA BEETLE (Epitrix hirtipennis) adults medium, 4-8 per leaf, on eggplants at Koko Head and Halawa, Oahu; trace to light on eggplants at Waianae and Waimanalo. (Funasaki).

Fruits and Nuts - COCONUT SCALE (Aspidiotus destructor) spreading on banana foliage at Pearl City, Oahu. Several previously uninfested "patches" in area now with generally light spotty infestations; some leaves heavily infested. Trace on banana foliage at Koko Head and Honolulu Airport areas. Still light to heavy on coconut trees in most coastal areas on Oahu. Larvae and adults of lady beetles (Lindorus lophanthae and Telsimia nitida) numerous on some infested banana foliage at Pearl City and on infested coconut foliage at Ewa Beach and Pearl City; generally light in other areas. (Funasaki, Au). COCONUT LEAF ROLLER (Hedylepta blackburni) moderately damaged coconut leaves in leeward coastal area of Oahu, especially in Waianae District. (Funasaki). MEXICAN LEAF ROLLER (Amorbia emigratella) larvae light on young guava foliage in wasteland, pastures, and wayside growths at Kapahi, Kauai. (Sugawa).

Forest, Shade Trees, Ornamentals - Adults of a PLATASPID BUG (Coptosoma xanthogramma) heavy, nymphs light, on maunaloa vines in windward areas on Oahu. Eggs numerous on leaves and stems, but heavily parasitized (about 90 percent) by Trissolcus sp., a scelionid wasp. Adults light, 1-3 per ripe mango, at Kipahulu, Maui. (Au, Tamura).

INSECT DETECTION

New State Records - An ANT (Pogonomyrmex salinus) Utah - Box Elder County (p. 571). An APHID (Stegophylla quercina) Maryland - Anne Arundel County (p. 580). FACE FLY (Musca autumnalis) Arkansas - Benton County (p. 580). A NOCTUID MOTH (Melipotis ochrodes) Hawaii - Oahu Island (p. 584). A PLANT BUG (Lopidea chelifer) Utah - Washington County (p. 571). SWEETPOTATO FLEA BEETLE (Chaetocnema confinis) Arizona - Maricopa County (p. 571).

New County and Island Records - An APHID (Panaphis juglandis) California - El Dorado, San Joaquin (p. 577); APHIDS (Myzocallis exultans, Periphyllus californiensis, Prociphilus fraxinifolii, Stegophylla quercina) Maryland - Prince Georges (p. 580). An ARMORED SCALE (Phenacaspis nyssae) Florida - Liberty (p. 580). BROWN RECLUSE SPIDER (Loxosceles reclusa) Missouri - Gentry (p. 581). CEREAL LEAF BEETLE (Oulema melanopus) Ohio - Gallia, Lawrence (p. 583). EUROPEAN CHAFER (Amphimallon majalis) Connecticut - Middlesex (p. 583). EUROPEAN EARWIG (Forficula auricularia) Pennsylvania - Bucks (p. 577). LARCH SAWFLY (Pristiphora erichsonii) Maryland - Anne Arundel (p. 579). MIMOSA WEBWORM (Homadaula anisocentra) Oklahoma - Pottawatomie (p. 579). A NOCTUID MOTH (Melipotis ochrodes) Hawaii - Kauai (p. 584). NORTHERN CORN ROOTWORM (Diabrotica longicornis) Kansas - Elk (p. 570). A PSYCHID MOTH (Apterona crenulella) Nevada - Douglas (p. 578). SOYBEAN CYST NEMATODE (Heterodera glycines) Arkansas - Yell (p. 584). A SPHINGID MOTH (Sphecodina abbottii) Florida - Liberty (p. 578). SUNFLOWER MOTH (Homoeosoma electellum) South Carolina - Hampton (p. 575). SWEETPOTATO FLEA BEETLE (Chaetocnema confinis) Arizona - Pima (p. 571). WESTERN CORN ROOTWORM (Diabrotica virgifera) Kansas - Chautauqua, Cowley, Elk, Greeley, Labette, Sumner, Wilson (p. 570). YELLOW CLOVER APHID (Therioaphis trifolii) Maryland - Harford (p. 571).

CORRECTIONS

CEIR 19(24):434 - APHIDS - WEST VIRGINIA - Periphyllus lyropictus (Norway-maple aphid) should read Periphyllus negundinis (boxelder aphid). Determined by L.M. Russell. (W. Va. Ins. Sur.).

CEIR 19(27):495 - BEANS AND PEAS - A CHINCH BUG (Nysius raphanus) should read A FALSE CHINCH BUG.

CEIR 19(29):555 - a CERAMBYCID BEETLE (Batorcera davidis Deyrolle)... should read a CERAMBYCID BEETLE (Batocera davidis Deyrolle).

CEIR 19(29):542 - WIREWORMS - WISCONSIN - Should read: Reduced 70 percent of stand in one cornfield in Langlade County.

Weather of the week continued from page 566.
Over 5 inches fell late Friday afternoon at Gulfport, Mississippi. Sunday morning brought more than 6 inches of rain to some of Cleveland's suburbs forcing 60 families from their homes. The Far West and the southern High Plains received no rain or only light widely scattered sprinkles. Light weekend showers occurred in New England and New York with totals ranging up to about an inch.

TEMPERATURE: Hot humid weather, while maintaining its grip on the South, Central, and Southeast, spread northward over the Northeast. By midweek, 90° heat reached New York and New England. Millinocket, Maine, registered 95° on Wednesday afternoon. Maximums reached the 70's and 80's in the Dakotas and Minnesota in the "cold" air north of the quasi-stationary front that stretched from the central Rockies to the St. Lawrence River Valley. A warming trend in the West late in the week pushed afternoon temperatures into the 90's as far as the Canadian border with Omak, Washington, registering 90° or higher on the last 3 days. A cooling trend in the Northeast dropped afternoon temperatures slightly. Weekend maximums in New York, New England, and Pennsylvania ranged in the 70's and 80's where the temperatures had reached the 90's earlier in week. Ninety degree heat continued from Virginia southward. (Summary supplied by Environmental Data Service, ESSA.)

LIGHT TRAP COLLECTIONS

	Temperature °F.	Precipitation (inches)	Type of trap (BL = blacklight, I = incandescent, MV = mercury vapor, O = other)	Agrotis ipsilon (black cutworm)	Carpocapsa pomonella (codling moth)	Chorizagrotis auxiliaris (army cutworm)	Estigmene acrea (salt-marsh caterpillar)	Faronta diffusa (wheat head armyworm)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm, tomato fruitworm)	Loxostege commixtalis (alfalfa webworm)	Loxostege similalis (garden webworm)	Loxostege sticticalis (beet webworm)	Manduca quinquemaculata (tomato hornworm)	Manduca sexta (tobacco hornworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Prodenia ornithogalli (yellow-striped armyworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Trichoplusia ni (cabbage looper)	Crops
FLORIDA																								
Gainesville 7/12-17			2BL				1		46	1	135					1		2	7	16	78	124		
KANSAS																								
Powhattan 7/15-16			BL	23							2						6			22		1		
Wolcott 7/13-15			BL	7							2						4			9		1		
MINNESOTA																								
Crookston 7/11-17																	2			7			2	
Fergus Falls 7/11-17																	34			5			1	
Rochester 7/11-17																	7			109				
Worthington 7/11-17																	25			61			2	
MISSISSIPPI																								
Stoneville 7/12-18	71-99	0.14	2BL	32					4	31	587								286	53				
MISSOURI																								
Fair Grove 7/12-16				6							1							2	28	17				
NEW JERSEY																								
Cedarville 7/9-16			BL	4													17		4	35			2	
Evesboro 7/9-16			BL	16											1		3	3	1	24				
Halltown 7/9-16			BL	6							10						19	3	10	54			2	
Plainsboro 7/9-16			BL	3							1						11	3	1	13			3	
OHIO																								
Wooster 7/9-16			BL	69			5	5									1	4		422			1	
TEXAS																								
Waco 7/12-18	79-104	none		2					25	5	311							4	4	2	37	6	214	
WISCONSIN																								
Madison 7/10-16			BL	1	5												1	5		13				
Mazomanie 7/9-16			BL														39			71				

Measuring Insect Infestations

You are aware of the increasing need for more adequate means for measuring insect populations. As you know, survey methods are available for about 80 pests. Limitations of some of these methods are recognized, but they do give a common language. What can be done about the many economic species for which survey methods have not been developed? With a little effort, we believe a lot can be done by simply making counts or numerical estimates if actual measurement is not possible or practical.

A review of the "Cooperative Economic Insect Report" will show that much survey information is reported in indefinite terms: Heavy, light, medium, moderate, rather heavy, considerable, troublesome, etc. It would seem that many of these abstract evaluations could be stated in definite terms such as insects per square foot, per square yard, per sweep, per plant, per animal. There is also a great need for more concrete information on insect damage. Compare the following reports on the same condition: "Approximately 40 percent defoliation in a 100-acre grove." "Heavy defoliation in one large grove."

The use of more numerical evaluations in insect survey would greatly improve communications between entomologists and others interested in survey results. Such evaluations would also make the data much more useful for records purposes.

We ask your help in improving the quality of reports on insect populations and their damage. We are aware that only through more research can we have better methodology in measuring insect populations and damage. Adequate research in this area is not likely to be forthcoming in the foreseeable future, however. In the meantime, we believe there are some constructive steps that can be taken to improve the existing situation.

The guidelines on the next page are offered as a reference for reporting insect conditions. If you have other suggestions, please send them to the address shown on the inside front cover of CEIR. They will be appreciated.

Preparation of Notes for Cooperative Economic Insect Report

Requests have been received relative to the type of information desired for the Cooperative Economic Insect Report.

The report is organized on a principal crop basis. This format is designed to make the material more accessible and readable. It is hoped this approach will also stimulate greater participation by pointing out lack of reporting on individual crop problems. Efforts will continue to be made to evaluate and present the information in ways to make it more useful in insect control.

Forecasting statements will be developed wherever field reports support such action. Reporters are encouraged to include this important information in their notes. The Cooperative Economic Insect Report will focus on the important insect problems of a regional and national nature. Notes on routine insect occurrence will be kept to a minimum. Routine notes submitted on common insects will be added to the National insect files as warranted, however.

The following guidelines are suggested for preparation of notes. It is realized that all of the information outlined will not be available in each situation, but give the following information when possible.

1. Common (if available) and scientific name of species involved. Stages of insect involved. (If a taxonomic problem exists, it should be noted).

2. Location (definite, recognized area within state, such as region, county or town), date, name of observer or reporter. If note is for period other than current reporting period, give date of observation.

3. Host involved, scope and extent of infestation in number of acres, trees, animals, etc. Also stage of host.

4. Quantitative evaluation of infestation according to recognized survey methods. Where such methods are not available, give numerical data such as number per linear foot, per plant, per sweep or per animal. These data should be based on a representative sampling. An adjectival rating should be accompanied by a numerical rating.

5. Estimation of extent of injury or damage

6. Comparisons with previous infestations, outlook or predictions for future infestations, unusual influences.

7. Status of natural or applied control.

8. When reporting new State, United States, or North America records include the above information insofar as applicable, as well as name of taxonomist making determination.

Examples of notes including these data are as follows:

EUROPEAN RED MITE (Panonychus ulmi) - Egg populations have reached point where protective sprays are warranted in 10 percent of apple orchards in Knox County. Counts on June 30 showed 0 to 4.8 live mites per leaf and 0 to 37.6 eggs per leaf. Further increase and spread expected with continued favorable weather. (Jackson, July 2).

EUROPEAN CORN BORER (Ostrinia nubilalis) - Oviposition and hatch practically complete in central counties. Fifty egg masses per 100 stalks in northwest area. In southern counties, all corn 35 inches or taller, 70 to 100 percent infested with 2 to 22 larvae per stalk. Larvae from first to third instar. (Smith).

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